General

Guideline Title

Clinical practice guidelines for the management of overweight and obesity in adults, adolescents and children in Australia.

Bibliographic Source(s)

National Health and Medical Research Council. Clinical practice guidelines for the management of overweight and obesity in adults, adolescents and children in Australia. Melbourne (Australia): National Health and Medical Research Council; 2013 Oct. 202 p. [459 references]

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Regulatory Alert

FDA Warning/Regulatory Alert

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory and/or warning information has been released.

- April 8, 2016 – Metformin-containing Drugs : The U.S. Food and Drug Administration (FDA) is requiring labeling changes regarding the recommendations for metformin-containing medicines for diabetes to expand metformin's use in certain patients with reduced kidney function. The current labeling strongly recommends against use of metformin in some patients whose kidneys do not work normally. FDA concluded, from the review of studies published in the medical literature, that metformin can be used safely in patients with mild impairment in kidney function and in some patients with moderate impairment in kidney function.

Recommendations

Major Recommendations

Definitions for grades of recommendation (A–D, CBR, PP) are provided at the end of the "Major Recommendations" field.

Weight Management in Adults

Ask and Assess

Body Mass Index (BMI) in Adults
Use BMI to classify overweight or obesity in adults. (B)

Waist Circumference

For adults, use waist circumference, in addition to BMI, to refine assessment of risk of obesity-related comorbidities. (C)

Other Factors in Assessment of Health Risk in Adults

Physical Comorbidities

- Current Australian guidelines should be used to guide assessment and management of absolute cardiovascular risk and type 2 diabetes in adults. (PP)
- Current Australian guidelines should be used to guide assessment and management of physical comorbidities associated with excess weight in adults. (PP)

Weight History

Weight history, including previous weight loss attempts, should be part of the assessment of people who are overweight or obese. (PP)

Readiness to Change

For adults who are overweight or obese, discuss readiness to change lifestyle behaviours. (D)

Advise

Explaining the Benefits of Lifestyle Change and Weight Loss

- Adults who are overweight or obese can be strongly advised that modest weight loss reduces cardiovascular risk factors. (A)
- Adults with prediabetes or diabetes can be strongly advised that the health benefits of modest weight loss include prevention, delayed progression or improved control of type 2 diabetes. (A)
- Adults with kidney disease or sleep apnoea can be advised that improvements in these conditions are associated with a 5% weight loss. (B)
- Adults with musculoskeletal problems, gastro-oesophageal reflux or urinary incontinence can be advised that weight loss of 5% or more may improve symptoms. (C)
- Adults who are overweight or obese can be advised that quality of life, self-esteem and depression may improve, even with small amounts of weight loss. (C)

Assist

Lifestyle Interventions

For adults who are overweight or obese, strongly recommend lifestyle change—including reduced energy intake, increased physical activity and measures to support behavioural change. (A)

Reducing Energy Intake

- Current Australian Dietary Guidelines should be used as the basis of advice on nutrition for adults. (PP)
- For adults who are overweight or obese, design dietary interventions for weight loss to produce a 2500 kilojoule per day energy deficit and tailor programs to the dietary preferences of the individual. (A)

Increasing Physical Activity

- Current Australian Physical Activity Guidelines should be used as the basis of advice on preventing weight gain through physical activity. (PP)
- For adults who are overweight or obese, prescribe approximately 300 minutes of moderate-intensity activity, or 150 minutes of vigorous activity, or an equivalent combination of moderate-intensity and vigorous activities each week combined with reduced dietary intake. (CBR)
- For adults who are overweight or obese, particularly those who are older than 40 years, there should be an individualised approach to increasing physical activity. (PP)

Supporting Behavioural Change

- Individual or group-based psychological interventions may improve the success of weight management programs. (PP)
- There is very limited evidence on the potential benefits or harms of complementary therapies in treating overweight and obesity. (PP)

Intensive Interventions

Very Low-energy Diets

Very low-energy diets are a useful intensive medical therapy that is effective in supporting weight loss when used under medical supervision. They may be a consideration in adults with BMI >30 kg/m^2, or with BMI >27 kg/m^2 and obesity-related comorbidities, taking into account the individual situation. (PP)

Weight Loss Medications

For adults with BMI ≥30 kg/m^2 or adults with BMI ≥27 kg/m^2 and comorbidities, orlistat may be considered as an adjunct to lifestyle interventions, taking into account the individual situation. (A)

Bariatric Surgery

- For adults with BMI >40 kg/m^2 or adults with BMI >35 kg/m^2 and comorbidities that may improve with weight loss, bariatric surgery may be considered, taking into account the individual situation. (A)
- Bariatric surgery, when indicated, should be included as part of an overall clinical pathway for adult weight management that is delivered by a multidisciplinary team (including surgeons, dietitians, nurses, psychologists and physicians) and includes planning for continuing follow-up. (PP)
- Bariatric surgery may be a consideration for people with a BMI >30 kg/m^2 who have poorly controlled type 2 diabetes and are at increased cardiovascular risk, taking into account the individual situation. (PP)

Developing an Appropriate Weight Management Program

Agreeing on Treatment Goals

Encourage people to make goals for behavioural change. (PP)

Supporting Self-management

- For adults, include a self-management approach in weight management programs. (C)
- Regular self-weighing (e.g., weekly) may be a useful component of self-management. (PP)

Planning for Review and Monitoring

For active weight management in adults, arrange fortnightly review for the first 3 months and plan for continuing monitoring for at least 12 months, with additional intervention as required. (B)

Arrange

Review and Monitoring

Early Review of the Suitability of the Weight Loss Program

The weight loss plan should be reviewed after 2 weeks to determine its suitability for that individual and to assess whether it needs to be modified. (PP)

Review in the First 3 Months

If there is no weight loss (less than 1% body weight or no change in waist circumference) after 3 months of active management, lifestyle behaviours and causes of weight gain should be reviewed. Intensive weight loss interventions may also be considered depending on degree of overweight or obesity and whether comorbidities are present. (PP)

Long-Term Weight Management

For adults who achieve initial weight loss, strongly recommend the adoption of specific strategies, appropriate to their individual situation, to minimise weight regain. (A)

Discussing Long-term Weight Management

- For long-term weight management, adults can be advised of the importance of taking action (e.g., seeing a healthcare professional) when small amounts of weight (approximately 3 kg) have been regained. If there is weight regain, consideration should be given to reassessing energy intake and physical activity, and re-intervening with weight loss strategies. (PP)
- Long-term weight management may be more successful if it involves a self-management approach, continuing contact with healthcare professionals and behavioural strategies for maintaining motivation. (PP)
- Self-management strategies for long-term weight management may include maintaining a healthy lifestyle, identifying ways to manage hunger, setting and reviewing goals, and regular self-weighing. (PP)

Children and Adolescents

Ask and Assess

Identifying Overweight and Obesity

Assessing and Monitoring Weight

- For children aged 2 to 18 years, use a BMI percentile chart to monitor growth, either the United States Centers for Disease Control and Prevention (US-CDC) or the World Health Organisation (WHO). Ensure that the same chart is used over time to allow for consistent monitoring of growth.* (PP)
- For children younger than 2 years of age, use WHO charts to monitor growth. (PP)

*This practice point is made pending a decision by the Australian Health Ministers' Advisory Council (AHMAC) on growth reference charts in Australia for children aged 2–18 years.

Waist Circumference

Waist:height ratio of ≥0.5 may be used to guide consideration of the need for further assessment of cardiovascular risk in children. (PP)

Other Factors in Assessment

History

Assist children and adolescents to get help for disordered eating, poor body image, depression and anxiety, and weight-related bullying where these are present. (PP)

Need for Referral Before Intervention

Refer children and adolescents to hospital or paediatric services if (PP):

- They are aged between 2 and 18 years, and have a BMI well above the 95th percentile on US-CDC growth charts or the 97th percentile on WHO growth charts.
- They are younger than 2 years, above the 97th percentile on WHO growth charts and gaining weight rapidly.
- They may have serious related comorbidities that require weight management (e.g., sleep apnoea, orthopaedic problems, risk factors for cardiovascular disease or type 2 diabetes, psychological distress.)
- An underlying medical or endocrine cause is suspected, or there are concerns about height and development.

Advise

Explaining the Benefits of Weight Management

Early weight management gives children and adolescents the opportunity to learn positive lifestyle behaviours, and reduce their risk of obesity, diabetes and cardiovascular disease in adulthood. (PP)

Assist

Family Involvement

- For children and adolescents, focus lifestyle programs on parents, carers and families. (C)
- For children and adolescents, plan weight management programs that involve frequent contact with healthcare professionals. (B)
- More frequent contact with a healthcare professional is generally more successful in the short term. In the longer term, the frequency of

contact needs to be balanced against sustainability, cost and resources, and the individual's needs. (PP)

Weight Management Approach

For children who are managing overweight or obesity, advise that weight maintenance is an acceptable approach in most situations. (D)

Weight Management Interventions

Lifestyle Interventions

- For children and adolescents who are overweight or obese, recommend lifestyle change—including reduced energy intake and sedentary behaviour, increased physical activity and measures to support behavioural change. (B)
- Current Australian dietary and physical activity guidelines should be used as the basis of advice on dietary intake, physical activity and sedentary behaviour for children and adolescents. (PP)

Specialist Interventions to Support Weight Loss in Postpubertal Adolescents

- For postpubertal adolescents with a BMI >40 kg/m^2 (or >35 kg/m^2 with obesity-related complications), laparoscopic adjustable gastric banding via specialist bariatric/paediatric teams may be considered if other interventions have been unsuccessful in producing weight loss. (C)
- Bariatric surgery should only be undertaken by a highly specialised surgical team within the framework of a multidisciplinary approach. (PP)

Arrange

Monitoring and Review

Assessing Changes in Weight Status

Regular monitoring of BMI (ideally 3 monthly or more frequently) may be an appropriate component of approaches to weight management. (PP)

Definitions:

Definition of Grades of Recommendations

Grade	Description
National Health and Medical Research Council (NHMRC) Recommendations	
A	Body of evidence can be trusted to guide practice
B	Body of evidence can be trusted to guide practice in most situations
C	Body of evidence provides some support for recommendation(s) but care should be taken in its application
D	Body of evidence is weak and recommendation must be applied with caution
CBR	Consensus-based recommendation (CBR) formulated in the absence of quality evidence
Scottish Intercollegiate Guidelines Network (SIGN) Recommendations	
SIGN*	Recommendation has been adapted for the Australian context from SIGN (2010)

*Note: SIGN gradings are outlined in Appendix C (Table C33) in the original guideline document.

Practice points are advice on subject matter that is outside the scope of the search strategy for the systematic literature review.

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Overweight and obesity

Guideline Category

Counseling

Evaluation

Management

Prevention

Risk Assessment

Clinical Specialty

Cardiology

Endocrinology

Family Practice

Gastroenterology

Geriatrics

Internal Medicine

Nursing

Nutrition

Obstetrics and Gynecology

Pediatrics

Physical Medicine and Rehabilitation

Psychology

Surgery

Intended Users

Advanced Practice Nurses

Allied Health Personnel

Dietitians

Nurses

Occupational Therapists

Patients

Physical Therapists

Physician Assistants

Physicians

Psychologists/Non-physician Behavioral Health Clinicians

Public Health Departments

Social Workers

Guideline Objective(s)

- To provide detailed, evidence-based recommendations for assessing and managing overweight and obesity in adults, adolescents and children
- To highlight the health benefits of reducing weight and to aim to improve health outcomes across a range of chronic diseases through evidence-based clinical practice

Target Population

- Adults and adolescents aged more than 18 years who have a body mass index (BMI) greater than 25 kg/m^2 and are at risk of, or have, one or more overweight or obesity-related comorbidities
- Children and adolescents aged between 2 and 18 years who have a BMI greater than the 85th percentile according to the United States Centers for Disease Control and Prevention (US-CDC) or World Health Organization (WHO) percentile charts
- Infants and children under 2 years of age who demonstrate rapid weight gain as assessed using WHO growth charts

Interventions and Practices Considered

Management in Adults

1. Asking about and assessing weight
    - Measuring body mass index (BMI)
    - Measuring waist circumference
    - Identifying risk level associated with waist circumference
    - Assessing other health risk factors (current health behaviours, risk or presence of comorbidities, factors that may contribute to weight gain, weight history, readiness to change)
2. Advising about weight loss
    - Explaining the benefits of lifestyle change and weight loss
    - Explaining the health risks associated with overweight and obesity
3. Assisting in weight loss
    - Lifestyle interventions (reducing energy intake, increasing physical activity, supporting behavioural change, complementary therapies and nutritional supplements)
    - Intensive interventions (very low-energy diets, weight loss medications, bariatric surgery)
    - Developing an appropriate weight management program (therapeutic engagement, agreeing on treatment goals, tailoring lifestyle approaches to the individual, supporting self-management, planning for review and monitoring, referral)
4. Arranging the weight loss program and weight management
    - Self-management
    - Long-term weight management

Management in Children and Adolescents

1. Asking about and assessing weight
    - Identifying overweight and obesity (assessing and monitoring weight [BMI, World Health Organization charts, waist circumference])
    - Other factors in assessment (history, clinical assessment, need for referral before intervention)
2. Advising about weight management: explaining the benefits of weight management
3. Assisting in weight management
    - Family involvement

    - Weight management approach
    - Weight management interventions (lifestyle interventions, surgery, specialist interventions to support weight loss in postpubertal adolescents)
4. Arranging the weight management program: monitoring and review

Major Outcomes Considered

- All-cause mortality
- Morbidity
- Type 2 diabetes and cardiovascular indicators in children and adolescents
- Fertility in overweight and obese adults
- Mental health issues and symptoms including depression, dementia, mood disorders in adults
- Mental health in children and adolescents
- Quality of life
- Musculoskeletal issues
- Cancer rates
- Degree of weight loss
- Duration of weight loss
- Cost-effectiveness

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

A systematic literature review (see the "Availability of Companion Documents" field) was conducted to examine the association between weight loss and the occurrence of chronic diseases and associated risk factors, and the effectiveness of interventions. Given the amount of literature published on obesity and the number of recently published guidelines, it was decided that systematic reviews and randomised controlled trials (RCTs) from 2007 onwards would be reviewed for inclusion.

Search Methods for Identification of Studies

Electronic Databases Searched

Searches were conducted in the following electronic databases:

- MEDLINE (2007 – current)
- PsycINFO (2007 – current)
- CINAHL (2007 – current)
- Cochrane Library (all years)

Limited handsearches of reference lists were conducted where additional studies were required to further explore specific topics of enquiry.

Terms Used to Search the Databases

Relevant Medical Index Subject Heading (MeSH) terms and subject headings were combined with key words of relevance to enable databases to be searched. Specific search terms can be found in Appendix C in the original guideline document and in the systematic literature review (see the

"Availability of Companion Documents" field).

Additional key words of relevance were sought during the electronic searches. None were identified.

It was proposed that separate searches would be conducted for each research question. However, once coding of abstracts commenced it became apparent that many studies that included disease outcome measures were not identified through specific searches. Therefore all studies where overweight and/or obesity were the subject of the study were coded for inclusion.

Methods of the Review

Study Selection

Two reviewers assessed abstracts and full articles for their relevance to the review. Full articles were retrieved for further assessment if the information provided in the abstract suggested that the study was relevant to the PICO (Population, Intervention, Comparator, Outcomes) questions found in Appendix C in the original guideline document and in the systematic literature review. When a title or abstract could not be rejected with certainty, the full text of the article was obtained for further evaluation.

Inter-rater agreement for study selection was measured using the kappa statistic. Where duplicate publications and companion papers were located, information was maximised by using all versions of the study that contained new data.

All published materials identified during the search strategy were coded for their relevance to the review. The following inclusion criteria were applied to abstract selection:

1. The study design was a randomised, placebo controlled clinical trial, systematic review or meta-analysis
2. The study appraised one or more of the following weight loss interventions:
    - Physical activity
    - Nutrition
    - Psychology
    - Medication
    - Surgery
3. The details of the weight loss intervention were described
4. Participants had overweight or obesity measured using one or more valid measures
5. Weight change was measured using a valid measure
6. Medical causes of obesity were absent
7. The study was not a duplicate publication containing only data that had been published in full elsewhere
8. Outcomes were measured after a period of at least 12 months
9. The study included a control group suitable for determining the overall effect of the intervention

The following specific exclusion criteria were applied:

- The article was a methodological paper
- The article was published in a language other than English

Abstracts that did not meet inclusion criteria were coded according to reason for rejection.

See the systematic review (see the "Availability of Companion Documents" field) for specific information.

Number of Source Documents

The search strategy, performed between April and July 2011, identified 4291 abstracts for perusal. On review of the abstracts, 416 articles were retrieved. Of these, 137 studies were identified as relevant.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

National Health and Medical Research Council (NHMRC) Level of Evidence Hierarchy

Level	Intervention	Diagnostic Accuracy	Prognosis
I	A systematic review of level II studies	A systematic review of level II studies	A systematic review of level II studies
II	A randomised controlled trial	A study of test accuracy with: an independent, blinded comparison with a valid reference standard, among consecutive persons with a defined clinical presentation	A prospective cohort study
III-1	A pseudo-randomised controlled trial	A study of test accuracy with: an independent, blinded comparison with a valid reference standard, among non-consecutive persons with a defined clinical presentation	All or none
III-2	A comparative study with concurrent controls	A comparison with reference standard that does not meet the criteria required for level II and III-1 evidence	Analysis of prognostic factors amongst persons in a single arm of a randomised controlled trial
III-3	A comparative study without concurrent controls	Diagnostic case-control study	A retrospective cohort study
IV	Case series with either post-test or pre-test/post-test outcomes	Study of diagnostic yield (no reference standard)	Case series or cohort study of persons at different stages of disease

Methods Used to Analyze the Evidence

Meta-Analysis

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Data Extraction

Data extracted included the following:

1. General information: authors, country, year of publication
2. Study design
3. Intervention: key features of weight reduction intervention(s) (e.g., method, timing), setting
4. Participants: number of participants, degree of overweight or obesity, inclusion and exclusion criteria, total number and number in comparison groups, withdrawals/losses to follow-up (reasons/description), number of included studies (for systematic reviews/meta-analyses)
5. Outcomes: degree of weight change, degree of change in other relevant outcome measure, duration of follow-up, compliance, adverse events.

A template data extraction form was developed and sent to the National Health and Medical Research Council (NHMRC) for review prior to data extraction.

Quality Assessment of Studies

The quality assessment of included studies was based on the NHMRC's "Levels of Evidence and Grades for Recommendations" for Developers of Guidelines (see the "Rating Scheme for the Strength of the Evidence" and "Rating Scheme for the Strength of the Recommendations" fields).

Quality assessment included appraisal of:

1. The level of evidence
2. A study quality rating
3. A magnitude of effect rating
4. A relevance rating

One reviewer assigned quality scores for each of the above quality items. A second reviewer randomly reviewed the quality scores of a subset of 10% of studies to assess accuracy. Refer to the systematic literature review (see the "Availability of Companion Documents" field) for additional information on quality assessment for individual studies.

Data Synthesis

A narrative summary of the information derived from publications was first developed by chronicling and ordering the evidence to produce an account of the evidence.

For Question 1 studies were grouped according to the specific clinical conditions that characterise the study subjects or outcomes being investigated (e.g., diabetes).

For Question 2 studies were grouped according to their component interventions, drawing upon the taxonomy used to classify quality improvement strategies, developed by the Cochrane Effective Practice and Organisation of Care (EPOC) group.

The relative effectiveness of the type of follow-up, frequency, intensity and duration was appraised, including differences between follow-up strategies that target the clinician and/or the patient.

Where required, meta-analyses were conducted of all available data from primary studies identified in included systematic reviews/meta-analyses or included randomised controlled trials (RCTs). Change data for available blood pressure, lipids and blood glucose control measures were extracted from included studies. Where data were not reported in full in the systematic review/meta-analysis, the primary study was retrieved and data extracted. Outcome measures were converted to the same units of measurement to enable calculation of weighted mean differences.

RevMan version 5 was used to conduct meta-analyses according to a fixed effects model for the main effect outcomes. Heterogeneity was assessed using the X^2 test. Where there was heterogeneity in subgroup analyses a random effects model was used. Subgroup analyses were performed for type of weight loss intervention, presence of comorbid chronic diseases, and age (paediatric versus adult cohorts).

Data Summary

An evidence statement of the literature for each key question was completed using the NHMRC Evidence Statement Form. The body of evidence was rated according to the following components:

Evidence base
Consistency
Clinical impact
Generalisability
Applicability

These components were rated according to the NHMRC Body of Evidence Matrix (2009) (see Table 3 in the systematic literature review).

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Governance and Stakeholder Involvement

The National Health and Medical Research Council (NHMRC) previously endorsed the *Clinical practice guidelines for the management of overweight and obesity in children and adolescents* (NHMRC 2003) and the *Clinical practice guidelines for the management of overweight and obesity in adults* (NHMRC 2003). In 2010 the Australian Government Department of Health and Ageing commissioned the

NHMRC to review the existing guidelines and develop recommendations based on the most recent evidence. These Guidelines have been developed by the NHMRC and draw on the procedures and requirements for meeting the 2011 *NHMRC standard for clinical practice guidelines*.

Organising Committee

An Organising Committee was established to ensure that all necessary administrative set-up tasks were undertaken so that, once operational, the Obesity Guidelines Development Committee (OGDC) could immediately and exclusively begin developing the Guidelines. The role of the Organising Committee was to determine:

- The scope of the Guidelines
- The expertise and skills required on the working group for the development of clinical practice guidelines for the management of overweight and obesity in adults, children and adolescents
- The organisational and governance arrangements for developing the Guidelines.

Methodological Support

Additional support was provided by NHMRC Health Advice Panel methodologist. Prior to the establishment of the OGDC, her advice was sought on development and adaptation processes and provided through teleconferences and email correspondence with NHMRC staff. The methodologist provided advice on guideline project set-up, resourcing, scope issues, and specific tools for guidelines assessment; feedback on activities; and contacts with other obesity-related guideline developers.

In November 2010, NHMRC staff consulted with members of guideline development groups from the Scottish Intercollegiate Guidelines Network (SIGN), the New Zealand Guideline Development Group and the National Institute for Health and Care Excellence regarding their experience in managing:

- Content issues that arose during the development of their respective guidelines
- Methodological challenges during the guideline development process
- Issues that arose during public consultation periods
- Issues that have arisen since the publication of the guidelines.

The NHMRC also requested relevant evidence tables from each guideline developer to review and include. The SIGN evidence tables were distributed to the systematic reviewer. Methodological support on the development and refinement of the clinical questions was sought from the NHMRC Health Advice Panel methodologist and systematic reviewer. She attended an OGDC meeting on 17 December 2010 to assist in refining the clinical questions and PICO (population, intervention, comparator, outcomes) criteria to be considered by the OGDC at its meeting on 17 February 2011.

Refer to the original guideline document for information on selection of committee members and consumer representatives.

Targeted Consultation

To aid implementation of the Guidelines in practice, the National Health and Medical Research Council (NHMRC) consulted with relevant external groups and primary healthcare professionals at various stages of the guideline development process. Consultation activities included:

- Consulting professional groups (members of the Royal Australian College of General Practitioners [RACGP] Quality Committee and the Australian Primary Care Collaborative GP Leadership Group) on the relevance of the clinical questions
- Conducting a survey of primary healthcare professionals (medical, nursing and allied health) through professional associations to identify preferred formats and information that health professionals would be likely to seek from the guidelines
- Consulting with primary healthcare professionals at various conferences, including GP11, a conference for general practitioners held in Hobart on 6–8 October 2011.

Feedback from these consultations was considered by the OGDC and technical writers in developing the structure of the Guidelines and determining the level of detail to be included.

Process of Recommendation Development

Formulation of Recommendations

At the 12–13 September 2011 meeting of the OGDC, the committee formulated draft recommendations based on the evidence statements. After the meeting, recommendations were circulated to the OGDC and a series of teleconferences were established to finalise the wording and

prioritisation of the recommendations and the supporting guideline content. Considerations in formulating recommendations included harms and benefits, equity (e.g., access and affordability) and autonomy (e.g., treatment is not appropriate if a person is not ready to change).

The technical writers ensured language and wording was consistent and reflected the strength of the evidence.

Process for Resolving Conflicting Evidence or Varying Interpretations of Evidence

In a few instances, the OGDC was required to formulate a recommendation based on controversial evidence. An example was Recommendation 13, referring to the body mass index (BMI) threshold for considering bariatric surgery. Some of the available evidence suggested that bariatric surgery should be considered for adults who had a BMI ≥30 kg/m^2 and comorbidities such as diabetes, but most of the research focused on patients with higher BMI (≥35 kg/m^2). The OGDC reviewed the evidence and debated the practical implications of the options. In this instance, the OGDC set the threshold as BMI ≥35 kg/m^2. Members noted that bariatric surgery was an invasive procedure that was not free of complications, and that capacity to undertake bariatric procedures was limited. They reasoned that the recommendation should help to confine its use to those more likely to benefit from surgery, so the higher threshold was chosen.

In a few other instances, the OGDC had to decide how to deal with interventions that were questioned in the public consultation. In such instances, the OGDC debated the available evidence afresh, particularly considering potential harms attributable to an intervention. For example, a public submission suggested that very low-energy diets caused significant adverse effects including eating disorders. Members of the OGDC differed in their views on the relative benefits and harms of very low-energy diets, based on their own experience in practice. The OGDC further reviewed the evidence given in the submission and noted that there was little evidence of harm from very low-energy diets when administered under medical supervision—harm appeared more likely to arise with unsupervised restrictive eating. This was noted in Section 6.2.1. of the guideline.

Adaptation of SIGN Recommendations

The SIGN recommendations for inclusion in these Guidelines were reviewed at the 12–13 September 2011 meeting of the OGDC. They were modified slightly to ensure consistent grammar, syntax and wording with the other recommendations (as per the 2011 NHMRC Standard) and to reflect the Australian context. Additional considerations surrounding the modified wording of the recommendations are outlined in Table C32 of the original guideline document. The SIGN grading system and evidence underpinning the recommendations are still maintained for these recommendations. Table C33 in the original guideline document is a summary of the SIGN grading system.

Consideration of Implications for Practice

For each recommendation, the OGDC discussed potential implications for practice. NHMRC staff recorded these comments during discussion of the recommendations and distributed them to the OGDC to review for insertion into the Guidelines.

Process for Developing the Consensus-Based Recommendation

The systematic review carried out to inform these Guidelines identified insufficient evidence to make a recommendation on the duration and intensity of physical activity to support weight loss or prevent weight regain. The SIGN recommendation advised a lesser amount of physical activity than that identified in more recent evidence for primary prevention of weight gain. The OGDC agreed to develop a consensus-based recommendation rather than adapt the SIGN recommendation.

The consensus-based recommendation is based on:

- The duration and intensity of physical activity required to provide additional health benefits including preventing weight gain (300 minutes of moderate-intensity activity, or 150 minutes of vigorous activity, or an equivalent combination of moderate and vigorous activities, each week)
- Evidence that physical activity has little effect on weight unless it is combined with reduced dietary intake
- Findings from one study into long-term weight maintenance that identified physical activity of 60 minutes per day as contributing to reduced weight regain.

Consensus on the wording was achieved by email.

Process for Developing Practice Points

Early in the guideline development process, OGDC members realised that research-based evidence did not exist for many important aspects of contemporary practice in the prevention and management of overweight and obesity. Exclusion of these aspects would have greatly reduced the usefulness of the Guidelines. The OGDC was reluctant to set down consensus-based recommendations because the diversity of the issues and the diversity of expertise among members seemed likely to preclude a comprehensive consensus process. Members therefore decided to offer

'practice points' that would give advice on what health professionals might do in dealing with particular clinical situations.

The process of formulating practice points was as follows:

- One or more members of the OGDC identified an important clinical problem or situation known to have created uncertainty or difficulty.
- Members with relevant expertise confirmed whether published evidence on the problem or situation was available for decision-making.
- If no published studies were available, the member or members with relevant expertise explained to the OGDC (in session) the importance of the problem or situation and why it was essential that the Guidelines include advice on it.
- The member or members with relevant expertise reflected on their own practice and proposed a practice point.
- The wording and implications of the practice point were discussed and refined by the OGDC and further refined by the technical writers engaged by the NHMRC.

As the development of the Guidelines progressed and as feedback was incorporated from the public consultation, some of the practice points were modified. All changes were discussed and the wording of each practice point was carefully reviewed by the OGDC.

Process for Developing the Narrative

Information included in the narrative was drawn from the background text of the systematic review, discussion by the OGDC at meetings and teleconferences, and other guidelines and materials identified by the OGDC. The committee's discussion of public consultation submissions informed the refinement of the narrative.

Rating Scheme for the Strength of the Recommendations

Definition of Grades of Recommendations

Grade	Description
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SIGN*	Recommendation has been adapted for the Australian context from SIGN (2010)

*Note: SIGN gradings are outlined in Appendix C (Table C33) in the original guideline document.

Practice points are advice on subject matter that is outside the scope of the search strategy for the systematic literature review.

Cost Analysis

Cost Implications of the Guidelines

The high prevalence of overweight and obesity imposes a large burden on primary health care to manage both weight and the associated comorbidities for individuals, with the potential benefit of improving health outcomes and reducing further costs to the health system. The Obesity Guidelines Development Committee (OGDC) considered potential cost and resource implications of the recommendations for patients and practice. The potential effect of each recommendation on clinical practice is described in the text, and data are referenced where available.

The health and cost burdens of overweight and obesity follow a protracted time line, and much of the data available in Australia are more relevant to population and preventative health outcomes than to clinical management.

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

Public Consultation

The draft Guidelines were released for a 30-day public consultation period, as required in the *National Health and Medical Research Council Act 1992*, on 29 March 2012. Submissions were received from health departments, nongovernment organisations, health services and individuals, with a total of 42 submissions. Key issues and how these were addressed are outlined in Appendix B of the original guideline document.

Independent Clinical Expert (Peer) and Methodological Review

Peer Review

The Guidelines were reviewed by two independent peer reviewers. Comments provided were discussed by the OGDC and the Guidelines changed to improve clarity about:

- The difference between sedentary behaviour and prolonged sitting
- The evidence base for Table 6.4 in the guideline (Summary of effects of weight management interventions)
- The use of growth charts for children and adolescents
- Active management versus long-term monitoring in children and adolescents.

Editorial suggestions and citations provided were also included.

Methodological Review

Three Appraisal of Guidelines for Research and Evaluation (AGREE II) appraisals were undertaken independently by NHMRC staff members who were not involved in the development of the Guidelines.

The Guidelines also underwent independent methodological review to ensure that processes and requirements of the NHMRC Procedures and requirements for meeting the 2011 NHMRC Standard for clinical practice guidelines (the 2011 NHMRC Standard) were met. The review highlighted some areas where clarity was required to meet mandatory requirements. Additional text was included to ensure consistency between the Guidelines and the technical report and to provide clearer explanation of:

- Processes used to involve and support consumer participants
- Consideration of ethical issues in formulating recommendations
- How Aboriginal and Torres Strait Islander peoples and any population subgroups were addressed in the search strategy and retrieved articles.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Even small amounts of weight loss bring health benefits including lowering cardiovascular risk, preventing, delaying progression of, or improving

control of type 2 diabetes, and improving a range of other health conditions. Quality of life, self-esteem and depression may also improve. Even if no weight is lost, lifestyle change that includes less energy intake and more physical activity is likely to have some health benefits.

Potential Harms

- Common adverse effects of low-energy diets include cold intolerance, dry skin, hair loss, constipation, headaches, fatigue and dizziness. Other potential effects are gallstones, increased serum uric acid levels and precipitation of gout, and reduced bone mineral density.
- Orlistat
  - Gastrointestinal side effects are common with orlistat use and include:
    - Steatorrhoea (oily, loose stools with excessive flatus due to unabsorbed fats reaching the large intestine)
    - Fatty faecal incontinence
    - Frequent or urgent bowel movements
  - Concentrations of fat-soluble vitamins (e.g. vitamins A, D, E and K) are reduced with orlistat use and, while they remain in the normal range, supplementation may be required if long-term use is contemplated.
  - Orlistat interacts with some medications and monitoring is required for people taking warfarin, as absorption of vitamin K may be reduced and international normalised ratio (INR) increased, and fat-soluble immunosuppressive medications (e.g., cyclosporine), as absorption may be reduced.
- Phentermine should be used with caution as it is associated with a range of side effects (e.g., hypertension, tachycardia, insomnia) and a risk of tolerance, and its long-term safety has not been tested.
- Diabetes may be dramatically improved in adults with metabolic syndrome one year after bariatric surgery, but an adverse 90-day outcome is common.
- While bariatric surgery can achieve long-term weight loss, the surgery is not always successful and may require revision or reversal of bariatric procedure depending on the type of surgery. Complications affect a significant proportion of people who have bariatric surgery and can include death.
- A public submission suggested that very low-energy diets caused significant adverse effects including eating disorders.

Contraindications

Contraindications

- Intensive interventions are contraindicated in children and prepubertal adolescents.
- Contraindications for very low-energy diets include:
  - Pregnancy or advanced age
  - History of severe psychological disturbance, alcohol misuse or drug abuse
  - The presence of porphyria, recent myocardial infarction or unstable angina
- A relative contraindication for very low-energy diets is the use of insulin or hypoglycaemics (except metformin), but very low-energy diets may be used if medication dosage is adjusted appropriately.
- Orlistat is contraindicated in women who are pregnant or breastfeeding, and in adults with malabsorption or hypersensitivity to orlistat.
- Reduced gallbladder function (e.g., after cholecystectomy) is a relative contraindication to orlistat and caution is advised when there is obstructed bile duct, impaired liver function or pancreatic disease.
- Medical contraindications to bariatric surgery include:
  - Severe gastrointestinal disease
  - Active cancer
  - Unstable heart or lung disease
  - Advanced liver disease with portal hypertension
  - Uncontrolled obstructive sleep apnoea with pulmonary hypertension
  - Serious blood or autoimmune disorders
- While not contraindications, careful monitoring of people with hypertension, high risk of pulmonary thromboembolism and diabetes is required.
- People must be able to give fully informed consent to bariatric surgery, so it may be contraindicated if the person is unable to understand the nature of the intervention and the need to commit to post-operative care plans.
- Very low-energy diets, weight loss medications and bariatric surgery are contraindicated in pregnant women.

Qualifying Statements

Qualifying Statements

- This document is a general guide to appropriate practice, to be followed subject to the clinician's judgement and patient's preference in each individual case. The Guidelines are designed to provide information to assist decision-making in a primary care setting and are based on the best available evidence at the time of development of this publication.
- The Guidelines do not include:
  - Discussion of the broad public health aspects of obesity prevention, which are outside the scope of these clinically focused Guidelines —these broad aspects are being addressed by a range of government policies to embed preventative health within primary healthcare settings.
  - Discussion of wider social issues associated with overweight and obesity, including societal norms of body shape and size, discrimination and stigma in the media and community, and how these affect lifestyle and behavioural change in individuals.
  - Guidance on the management of risk factors and comorbidities associated with overweight and obesity—the need to assess and manage risk factors and comorbidities is highlighted, and a range of relevant Australian and other guidelines are listed in Part E in the original guideline document.

Implementation of the Guideline

Description of Implementation Strategy

Dissemination

Alongside the review of the Guidelines, the Australian Government Department of Health (DoH) is developing a website to provide consumers with advice on how to achieve and maintain a healthy weight. The website is based on qualitative research into healthy weight messages in the consumer environment and reviews of the available evidence in relation to healthy weight and is available at http://www.healthyactive.gov.au/internet/healthyactive/publishing.nsf/Content/healthyweight .

Where possible and/or appropriate, the dissemination and availability of the Guidelines will be linked to this website and/or with other associated DoH guidelines currently being produced relating to clinical chronic disease management and associated risk factors within primary health care.

Implementation

To improve the implementation of the Guidelines in practice, the National Health and Medical Research Council (NHMRC) has used a consultative approach to inform the structure, format and relevance of information for practice, including the assessment of likely barriers to the use of the Guidelines. This included:

- Consulting professional groups on the relevance of the clinical questions
- Conducting a survey of primary healthcare professionals to identify preferred formats and information that health professionals would likely seek from the Guidelines
- Consulting with primary healthcare professionals at various conferences during the development of the Guidelines

It is anticipated that DoH will manage the Guidelines' implementation, with the associated chronic disease guidelines being developed by DoH and scheduled for implementation within primary health care. DoH will consult with relevant Australian professional associations on the promotion and implementation of the Guidelines.

Implementation of the Guidelines Recommendations

It is anticipated that routine assessment of weight, height and body mass index (BMI), and promotion of health benefits, may increase consultation times with healthcare professionals for some individuals. This can be somewhat offset by encouraging self-monitoring of height and weight, which is reinforced by other public health messages or campaigns. Referral to weight management clinics, other health providers and local services for more specific advice and goal setting would reduce the time implications for primary healthcare professionals.

Ensuring that primary healthcare professionals reinforce public health messages around lifestyle interventions and promote discussion of healthy

weight ranges could also assist other current preventive health programs across Australia.

Other limiting factors for implementing recommendations in primary health care are as follows:

- *Patient motivation*—It is often difficult for general practitioners (GPs) to gauge how ready an individual is to change, or when and how to suggest that the individual would benefit from a weight management program. Reinforcing the benefits of a healthy lifestyle, routine measurement of weight and discussion of weight trends will help to facilitate this discussion.
- *Clinical presentation*—GPs see many people who are already overweight or obese, reinforcing the need to maintain therapeutic relationships and send reminders for health checks.
- *Time*—Consultation with a GP is typically held in time slots of between 5 and 30 minutes. Management of individuals will need to occur over multiple sessions, but may also be done by other health professionals in the team, such as a practice nurse. Recall times could potentially be shorter if both the patient and GP were aware that the appointment would be a routine health check.
- *Monitoring and follow-up*—Monitoring can be conducted by other health providers, organisations and groups, including commercial weight loss programs. While this should not replace consultations with the usual healthcare provider, it promotes awareness of healthy weight and provides the support individuals need to adhere to programs or maintain a healthier weight.
- *Locality of services*—In rural and remote areas, and even in larger cities, services may not be available or be difficult to access. It is important that each practice understands who is available in the area and builds a local network of providers and services that can be used in a weight management program.
- *Duration of intervention*—Given the likelihood of weight regain, once weight loss has been achieved, monitoring is still necessary to establish whether the intervention maintains effectiveness. Additional interventions may be required to sustain the weight lost. Team-based care can assist in monitoring and help guide decisions about specific methods to sustain weight loss.

Implementation Tools

Chart Documentation/Checklists/Forms

Patient Resources

Quick Reference Guides/Physician Guides

Staff Training/Competency Material

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

Staying Healthy

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

National Health and Medical Research Council. Clinical practice guidelines for the management of overweight and obesity in adults, adolescents and children in Australia. Melbourne (Australia): National Health and Medical Research Council; 2013 Oct. 202 p. [459 references]

Adaptation

Some of the recommendations in this guideline were adapted from: SIGN (2010) *Management of obesity. A national clinical guideline*. Edinburgh: Scottish Intercollegiate Guidelines Network.

Date Released

2013 Oct

Guideline Developer(s)

National Health and Medical Research Council - National Government Agency [Non-U.S.]

Source(s) of Funding

The Australian Government Department of Health and Ageing (DoHA) funded the development of these Guidelines.

Guideline Committee

Obesity Guidelines Development Committee (OGDC)

Composition of Group That Authored the Guideline

Committee Members: Professor Michael Frommer (*Chair*), Associate Dean (Teaching and Learning), Professor, School of Public Health, The University of Sydney; Assoc Professor Susan Byrne, Associate Professor, School of Psychology, University of Western Australia; Professor Ian Caterson AM, Boden Professor of Human Nutrition, Director, Boden Institute of Obesity, Nutrition, Exercise and Eating Disorders, University of Sydney; Dr Dale Ford, Medical Director, Otway Division of General Practice, Victoria, Board Member, Australian Primary Care Collaborative Advisory Committee; Professor Mark Harris, Professor of General Practice, Centre for Primary Health Care and Equity, University of New South Wales, Member, Quality Committee, Royal Australian College of General Practice; Dr George Hopkins, Laparoscopic, General and Obesity Surgeon, Royal Brisbane and Women's Hospital, Queensland, Obesity Surgery Society of Australia and New Zealand; Ms Kay Gibbons, Head of Nutrition Services, Royal Children's Hospital, Victoria, Fellow, Dietitians Association of Australia; Mrs Marion Goodman, Practice Nurse, Barton Lane Practice, New South Wales, Member, Australian Practice Nurses Association; Dr Tammy Kimpton, General Practitioner, Scone Medical Practice, New South Wales, Board Member, Australian Indigenous Doctors' Association; Ms Helen Mikolaj, Consumer Representative, Member, Consumer Health Forum; Joseph Proietto, Professor of Medicine, Austin Health, University of Melbourne, Director, Weight Control Clinic, Austin Health; Dr Matt Sabin, Paediatric Endocrinologist, Royal Children's Hospital, Murdoch Children's Research Institute, Victoria

Financial Disclosures/Conflicts of Interest

Declaration of Conflict of Interest Process

Members of the Obesity Guidelines Development Committee (OGDC) were required to declare their conflicts of interest in writing, prior to appointment, as part of the process of the establishment of any National Health and Medical Research Council (NHMRC) committee.

Committee members were required to inform the Chair of the OGDC and the NHMRC of any changes to their interests.

Declarations of conflicts of interest were called for and updates requested as a standing agenda item at the beginning of each committee meeting. While the evidence was being discussed, members were requested to declare any involvement in upcoming related publications, or involvement in any publications that had been included in the systematic review process. New information was recorded in a register of conflicts of interest.

Where committee members were identified as having a significant real or perceived conflict of interest, the Chair could decide that the member either leave the room, or remain present but not participate in the discussion or in decision-making on the specific area relating to the conflict. There were no instances in the development process where the Chair required a member to leave the room during the discussion of the evidence because of a significant perceived or real conflict of interest.

The process to manage conflicts of interest and consensus for decision making was in accordance with the NHMRC *Members' responsibility regarding disclosure of interest and confidentiality* document, which applies to all members of the Council of the NHMRC, Principal Committees and Working Committees (in accordance with the requirements of the *National Health and Medical Research Council Act 1992*).

All declarations of interest were added to a register of interests (see Appendix B in the original guideline document).

When the committee had concerns about conflicts of interest related to particular studies, this was noted in the relevant evidence statement. Where the committee was made aware of potential conflicts of interest after the evidence review process, this is noted next to the reference to the relevant study in the Guidelines.

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Electronic copies: Available from the National Health and Medical Research Council (NHMRC) Web site .

Availability of Companion Documents

The following are available:

- National Health and Medical Research Council. Clinical practice guidelines for the management of overweight and obesity in adults, adolescents and children in Australia. Systematic review. Melbourne (Australia): National Health and Medical Research Council; 2013. 660 p. Electronic copies: Available from the National Health and Medical Research Council (NHMRC) Web site .
- National Health and Medical Research Council. Summary guide for the management of overweight and obesity in primary care. Melbourne (Australia): National Health and Medical Research Council; 2013. 30 p. Electronic copies: Available from the NHMRC Web site .

Case studies and the World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC) body mass index (BMI) percentile charts are available in the original guideline document .

Patient Resources

Advice for consumers on how to achieve and maintain a healthy weight is available from the Australian Government Department of Health Web site .

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors

or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC Status

This NGC summary was completed by ECRI Institute on July 25, 2014. The information was verified by the guideline developer on August 28, 2014. This summary was updated by ECRI Institute on April 15, 2016 following the U.S. Food and Drug Administration advisory on Metformin-containing Drugs.

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